










**Piezo electric vibrator pump.****Publication number:** EP0322899**Publication date:** 1989-07-05**Inventor:** OKUYAMA HIDENORI**Applicant:** MISUZUERIE CO LTD (JP)**Classification:****- International:** *H02M7/5387; F04B43/04; H01L41/04; H01L41/09; H03K4/02; H03K17/66; H02M7/5387; F04B43/02; H01L41/00; H01L41/09; H03K4/00; H03K17/60; (IPC1-7): F04B43/04; H01L41/04***- european:** F04B43/04M2; H01L41/04B; H01L41/09G**Application number:** EP19880121803 19881228**Priority number(s):** JP19870332600 19871228**Also published as:** US 4939405 (A1)  
 J P1174278 (A)  
 E P0322899 (A3)  
 E P0322899 (B1)**Cited documents:** US 3606592  
 US 3255779  
 US 4011474  
 F R2425555  
 F R2528116  
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A pump is comprised of a piezo-electric vibrator (2) mounted in a casing (1). The piezo-electric vibrator (2) is coated with an elastic elastomer layer (10), and a peripheral part of the elastomer layer is secured to the casing (1) within the casing (1). Suction and discharge of fluid is performed by means of a piezo-electric vibrator vibrated by applying alternative current voltages between electrodes (3,4) of the piezo-electric vibrator (2). The vibration of the piezo-electric vibrator (2) is performed smoothly to produce and high discharge volume and discharge pressure can be produced.

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